

AZA Annual Report of the Tiger SSP: 2002
TIGER
(Panthera tigris)

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Introduction

Three of five *Panthera tigris* subspecies (*P.t. altaica*, *P.t. corbetti*, and *P.t. sumatrae*) are currently managed by the AZA Tiger SSP, as recommended by the IUCN/SSC CBSG *Tiger Global Conservation Strategy* (GCS) and ratified at the 1992 Annual AZA Tiger SSP Meeting in Toronto. The Amur (Siberian) tiger population will be managed at the current level of 150 tigers, and each of the other two subspecies, Sumatran and Indochinese, will be expanded up to a maximum of 150 tigers each. All subspecies will be managed to maximize the retention of gene diversity, but it is recognized that it may not be feasible to maintain 90% gene diversity over a 100-year program without substantial founder importation, particularly for the Sumatran and Indochinese subspecies. For future years the Tiger SSP may need to consider the option of managing only two subspecies, one temperate (Amur) and one tropical (Sumatran or Indochinese), depending on our ability to reach program goals and the feasibility of acquiring sufficient founders.

Data Tables (current through 1 March 2002)

	Two years ago	One year ago	Current year
Amur (Siberian)			
# participating institutions	59	55	57
Total captive population	81.67 (148)	78.69 (147)	78.71 (149)
# SSP animals managed	97	93	103
# SSP recommended births	12	12	15
# SSP non-recommended births	2	0	0
# deaths of SSP animals	14	12	13
# imports	0	1	0
# exports	0	0	0
# founders with descendants	57	57	57
Sumatran			
# participating institutions	30	28	27
Total captive population	33.26 (59)	33.26 (59)	31.24 (55)
# SSP animals managed	55	48	47
# SSP recommended births	7	4	1
# SSP non-recommended births	0	0	0
# deaths of SSP animals	2	4	5
# imports	0	0	0
# exports	0	0	0
# founders with descendants	16	16	16
Indochinese			
# participating institutions	8	10	14
Total captive population	12.14 (26)	16.17 (33)	18.19 (37)
# SSP animals managed	26	32	36
# SSP recommended births	14	9	6
# SSP non-recommended births	0	0	0
# deaths of SSP animals	0	2	2
# imports	2	0	0
# exports	0	0	0
# founders with descendants	4	4	4

Current Population Status

The Tiger SSP currently manages three tiger subspecies – the Amur tiger (*Panthera tigris altaica*), Sumatran tiger (*P.t. sumatrae*) and Indochinese tiger (*P.t. corbetti*). As of March 2002 there are 87 SSP member institutions holding 266 tigers: 149 Amur tigers (56%); 55 Sumatran tigers (21%); 37 Indochinese tigers (14%); and about 25 generic tigers (9%). For the present, the Tiger SSP plans to expand the captive tiger population to eventually fill the 450 spaces suggested by the AZA Felid Taxon Advisory Group, allotting 150 spaces to each subspecies. The Amur tiger population will be held stable at approximately 150 tigers, while the Sumatran and Indochinese tiger populations will be expanded

The current Amur tiger SSP population stands at 149 individuals derived from 57 founders and retaining 96.7% gene diversity. This captive population has a stable age structure and good reproductive success.

Wild Amur tigers are found primarily in two populations in the Russian Far East and at least one or more populations on the Russia-China border and into northeast China. Estimates are about 400 wild adult tigers. This subspecies is considered critically endangered by the IUCN/SSC Cat Specialist Group and, like all five tiger subspecies, is threatened primarily by habitat loss and fragmentation. Poaching pressure apparently has declined recently due to intensive anti-poaching activities.

The Sumatran tiger SSP population consists of 55 individuals derived from 16 founders and retaining 91.3% gene diversity. A breeding moratorium was under effect from 1994-1997 pending the results of DNA testing to verify subspecies purity, resulting in a gap in the population's age structure. Importations of Sumatran tigers from Indonesia are being pursued to promote the genetic basis of this population.

There are an estimated 400 wild Sumatran tigers living primarily within six national parks and possibly within a few other protected areas of Sumatra. This subspecies is also considered critically endangered by the IUCN/SSC Cat Specialist Group. In the past year field reports suggest that available habitat is under severe pressure from squatters and lumber extraction, fragmentation is increasing and poaching pressure is at an all-time high.

The Indochinese tiger SSP population is now at 37 tigers maintained in 14 institutions. This population is based upon only four founders and currently retains 80.8% gene diversity. The importation of new founders is critical to the viability of this program and needs to be actively pursued.

Wild Indochinese tigers live in small isolated subpopulations throughout mainland Southeast Asia and are estimated to number about 1,200-1,800. Indochinese tigers are considered endangered by the IUCN/SSC Cat Specialist Group. Many of these populations are fragmented, poaching is intense, and optimal habitat is decreasing. A recent field report from Cambodia describes a newly discovered population inhabiting a vast relatively undisturbed forest.

Demographic Trends

The Amur tiger population has been managed at about 150-160 animals over the past 15 years to allow newly available spaces to be used for the other two tiger subspecies. Generation time for this stable population is 8.2 years, sex ratios at birth are equal, and the average litter size is 2.5 cubs. Mortality prior to reproductive age is about 40%. The Sumatran tiger population has been fairly static at 55-60 since the breeding moratorium despite the resumption of breeding in 1997.

This population is becoming demographically insecure as the majority of the breeders age. Post-moratorium recruitment has been low. Concerted efforts are being made to increase reproductive success so that the population can be expanded and made demographically viable. The Indochinese tiger population has grown dramatically from 10 to 37 individuals since population expansion was sanctioned at the 1998 master plan meeting, resulting in a young age structure. Demographic parameters for Sumatran and Indochinese tigers are similar to those for Amur tigers, except that mean litter size is larger (3.0 cubs) and generation time is shorter (5.8 years) for Indochinese tigers.

Population Genetics

Gene drop analyses of the Amur managed population indicate that 96.7% of the gene diversity has been retained in the population, representing 15.22 founder genome equivalents (FGE) from 57 founders. Gene diversity has gradually increased for the past 20 years due to population management and the periodic incorporation of new genetic founders from Europe and Russia. Current inbreeding levels are relatively low (mean $F = 0.008$). Genetic analyses of the Sumatran population indicates that 91.3% of the gene diversity has been retained. Sixteen founders (5.74 FGE) are represented in the population. Inbreeding is becoming more prevalent (mean $F = 0.035$), and new founders will be needed to maintain 90% gene diversity. The Indochinese tiger population has retained 80.8% gene diversity (FGE =

2.68) and is descended from four founders. All potential breeders are now related, and inbreeding will quickly increase from its current level (mean $F = 0.079$) without genetic supplementation. Recruitment of new founder stock for the Sumatran and Indochinese tiger programs is a high priority and will be essential for the viability of these SSP populations.

Special Concerns

New founders are necessary for the Sumatran and Indochinese tiger SSP populations. Acquisition of new founders, particularly from range country programs, is a great concern if these populations are to be viable. The availability of wild-caught problem tigers and/or their captive-born offspring is being investigated.

A second concern is the relationship between the Tiger SSP and the private sector, where many tigers (mostly of unknown origin) are kept. During the 2002 Tiger SSP master plan meeting in Portland there was a discussion of the appropriateness of handling tigers in public places by AZA zoos. There was complete consensus of all members in attendance that such actions place the viewing public at risk of injury or death, that there is no education message of value being delivered, that such actions promote private ownership and a false sense of safe handling of exotic big cats, and that the animal itself loses its dignity as an ambassador from the wild. As a result, the committee resolved such actions were inappropriate for AZA-accredited zoos, and that the AZA accreditation committee should make compliance of this restriction part of its accreditation process. This opinion statement was conveyed to the executive committee of the Felid TAG for comments and action.

Research

The SSP continues to support research efforts to develop more reliable assisted reproduction techniques for tigers and other large cats. Field research continues in Sumatra to develop a holistic approach to the conservation of tigers across the island (see below). A seven-month field census of wild South China tigers was completed this year.

Progress toward Goals

1. The Tiger SSP held a master plan meeting on 27-28 October 2000 at the St. Louis Zoo. Fourteen management group members, coordinators, advisors and institutional representatives attended the meeting. Twenty-six breeding recommendations and 27 transfers were scheduled for the 2001 management season. The *Tiger SSP Five-Year Plan* was briefly reviewed and updated during the meeting
2. The Tiger SSP is in the process of importing genetically valuable Sumatran tigers from Indonesia.
3. The Sumatran Tiger Project continued its field study in Sumatra focusing on censusing tiger populations in Sumatra. New initiatives include an undercover investigation of trafficking in tigers (and rhinos) in Sumatra, long-term monitoring of a resident tiger population, and establishment of tiger anti-poaching teams in three national parks.
4. A demographic and genetic analysis of the captive South China tiger population, along with recommendations for population management, was submitted to the Chinese Association of Zoological Gardens at its annual South China Tiger Management Committee meeting in Suzhou, China in December 2000. An analysis of the studbook data was conducted to evaluate factors leading to low reproductive success in this population.
5. The Tiger Information Center, located at the Minnesota Zoo and funded by the *Save the Tiger Fund*, continued to expand its extensive database of tiger information for all levels of interest (<http://www.5tigers.org>).
6. A new vehicle for communicating what is occurring with programs, activities, announcements, and other events affecting the Tiger SSP, *Tiger Newsflash*, is e-mailed to the nine-person management group, nine coordinators and advisors, some 100 institutional representatives, 120 funders and other interested groups. This allows the Tiger SSP to reach a wider audience more quickly and economically.

Field Conservation

1. Sumatran Tiger Project: After two and one-half years of negotiations, the Sumatran Tiger Project signed a five-year (plus five-year automatic extension) Memorandum of Understanding with the Indonesian Department of Forestry (PHKA). The MoU focuses exclusively on tiger conservation management and provides an umbrella agreement under which tiger conservation activities may be carried out anywhere in Sumatra. The State Secretariat of Parliament has ratified the agreement at the highest level.

Since the activities of this cooperative partnership will represent a continuation of the Sumatran Tiger Project 1995-99, Way Kambas National Park will remain a focus area. Activities will also be initiated in Bukit Tigapuluh National Park of Riau and Jambi provinces (TCU priority area for survey) and in Berbak National Park of Jambi (also undeveloped as a

tiger conservation management area). Other areas will be developed as priorities arise from the PHKA. Tiger anti-poaching teams and intelligence networking will be an important component of this project

The current economic crisis in Indonesia has led to a reduction in law enforcement and an associated increase in poaching activities throughout Sumatra. The project is assisting in the development of anti-poaching teams with the Indonesian Sumatran Rhino Conservation Program. A year-long undercover investigation of trafficking of tiger products in Sumatra was completed in 2000.

2. South China Tiger Protection Program: In February of 2001, Minnesota Zoo conservation staff helped the Chinese State Forestry Administration (SFA) launch its South China Tiger Protection Program. The objectives were to support the SFA to train, equip and advise Chinese field survey teams on how to census wild South China tigers distributed over a vast landscape in the provinces of Guangdong, Hunan, Jiangxi, Fujian and Zhejiang in south central China. Our ultimate goal was to find and photograph as many wild tigers as possible, and to combine these photos with other field data on the status of tiger prey, habitat quality, and perceived threats so that the SFA can establish the number and distribution of any South China tigers remaining in the wild, their probability of survival, and management needs to secure their future.

In March 2001 the U.S. advisory team, Chinese Forestry Department officials, university professors and students convened at a tiger field census workshop in Longyan, Fujian Province. The objectives were to review field data collected by forestry officials on wild tiger presence in the provinces, to identify promising sites to survey, and to conduct training exercises in emerging tiger field methodology. After the workshop a field team visited eight potential South China tiger reserves, trained Chinese field workers in tiger survey methodology, interview procedure, and remote camera set-up, operation and care. . Over seven months more than 1000 man-hours were spent ground-truthing hundreds of kilometers of remote mountain trails and ridges in potential tiger reserves to verify and document recent and historical tiger trace reports, prey presence and trends, habitat quality, and human disturbance. Informal interviews were conducted with local villagers to document wildlife trends and knowledge, livestock management practices, local land and resource use, and conservation attitudes.

3. 5Tigers Website: *The Save The Tiger Fund* council of the National Fish and Wildlife Foundation approved funding for the 5Tigers's web site (www.5tigers.org), hosted by the Minnesota Zoo. The site averages about 6,400 daily sessions (this amounts to over 200,000 hits per day) from over 80 countries. This year marks the eighth straight year of support from the *Save The Tiger Fund*, a special partnership between the NFWF and ExxonMobil. Much of the tiger husbandry manual and other Tiger SSP-related information can be found on the site.

Short-Term Goals for Coming Year

1. Implement the planned transfers and breedings approved at the recent Tiger SSP Master Plan meeting at the Oregon Zoo in April 2002 and its five-year action plan.
2. Continue the implementation of recommendations from the *IUCN/SSC CBSG Tiger Global Conservation Strategy*.
3. Implement as much as possible recommendations suggested in the CBSG-sponsored global captive management strategy for Sumatran tigers that includes mechanisms for interregional exchanges in cooperation with regional coordinators from the EEP, ASMP and PKBSI.
4. Pursue expansion of the Indochinese tiger program through importation of additional tigers and increasing the number of institutions managing Indochinese tigers.
5. Expand the focus of the Sumatran Tiger Project by extending the use of censusing and evaluation techniques to other surrounding areas of Sumatra.
6. Continue to assist the Chinese State Forestry Administration with its South China Tiger Protection Program.

Financial Report

Most tiger-related projects are not direct projects of the Tiger SSP, and therefore there is no financial accounting by the SSP. Tiger field projects in 2001 were funded through grants from The Tiger Foundation (Canada), the Sumatran Tiger Trust (UK), the U.S. Fish and Wildlife Service (Rhino and Tiger Conservation Fund), Save China's Tigers (UK) and the Minnesota Zoo.